OIPE IAP1
DEC 04 2006
PATENT & TRADEMARK OFFICE



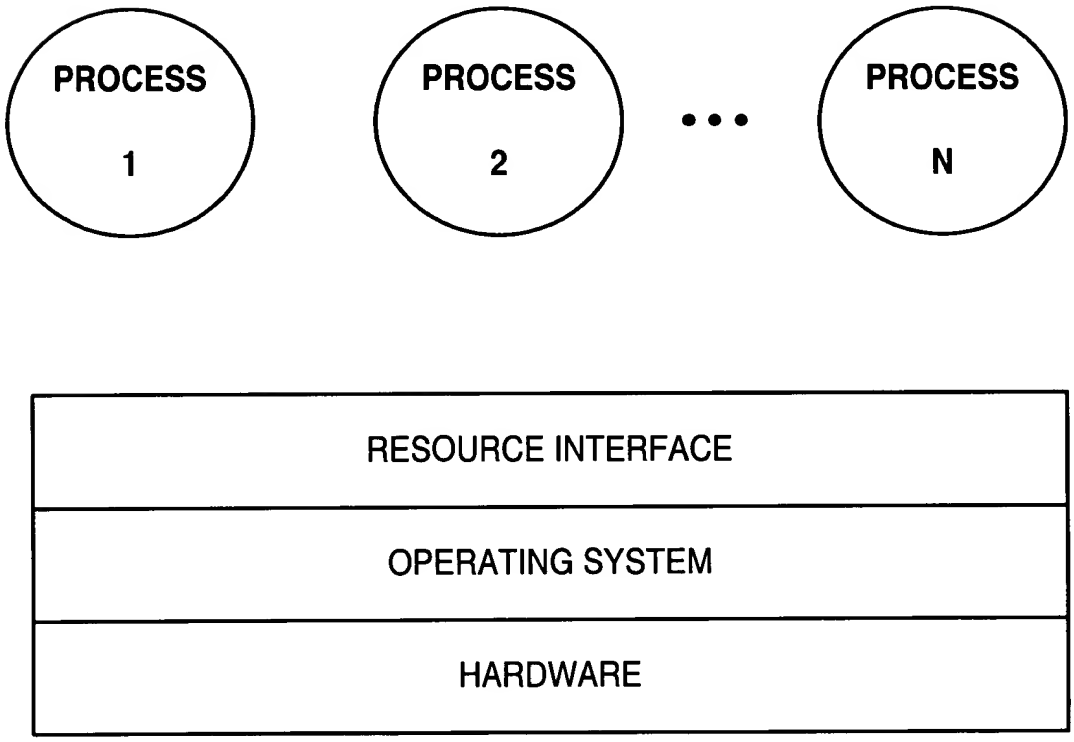


**FIG. 1**

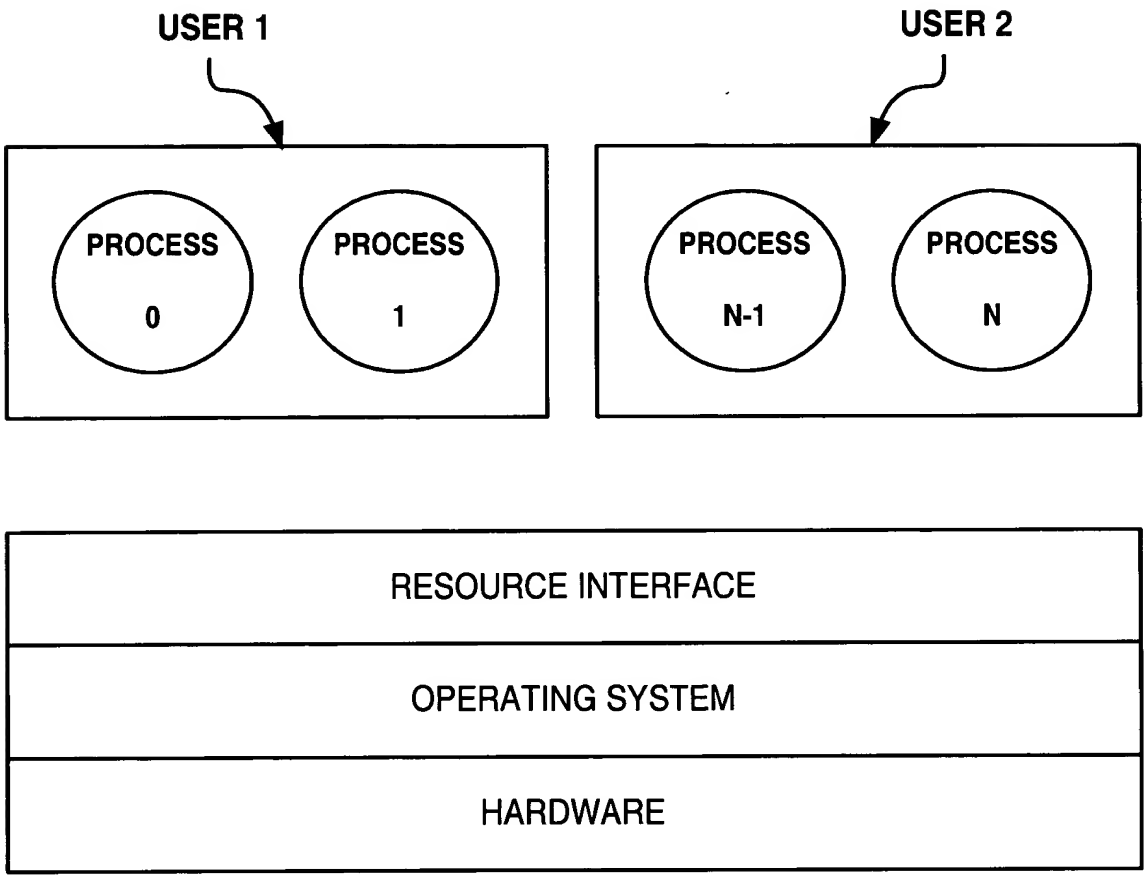
USER 1
USER 2
PROCESS 0
PROCESS 1
PROCESS N-1
PROCESS N
RESOURCE INTERFACE
OPERATING SYSTEM
HARDWARE

FIG. 2

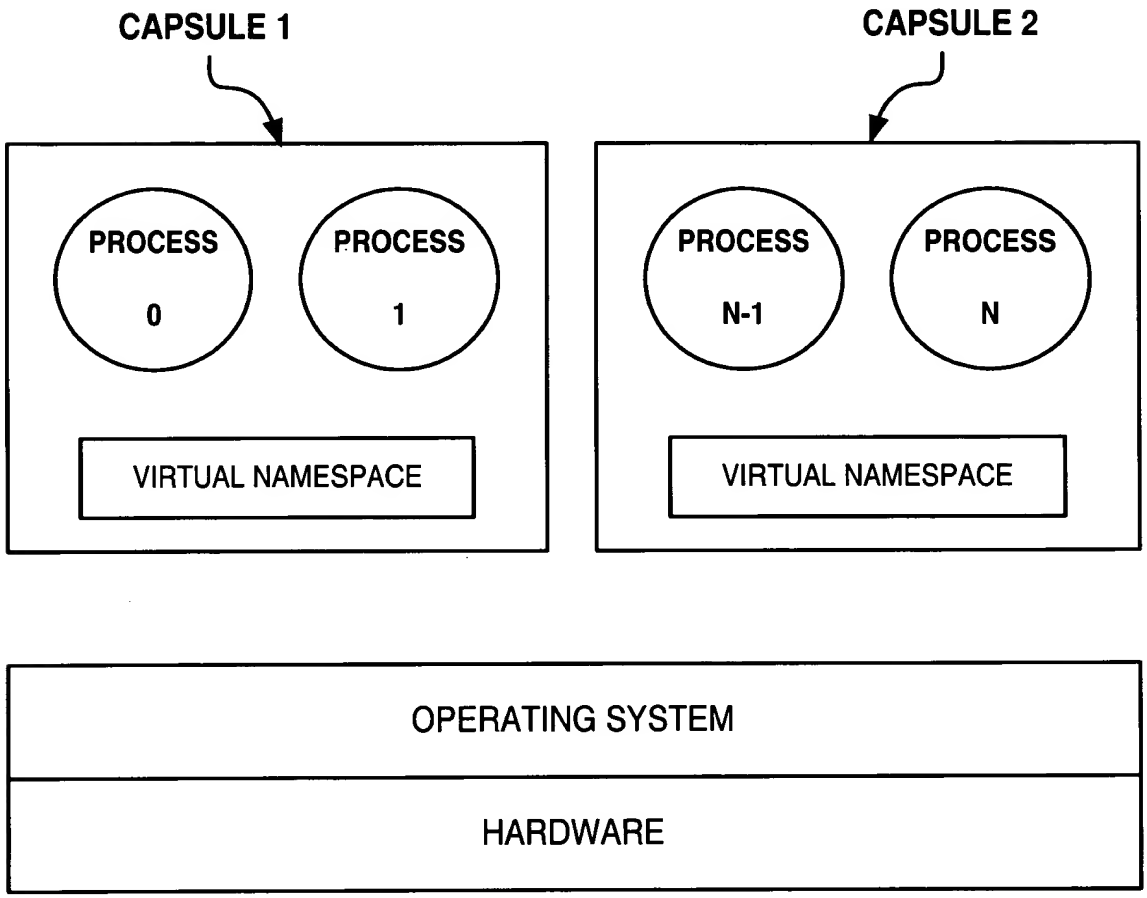
CAPSULE 1
CAPSULE 2
PROCESS 0
PROCESS 1
PROCESS N-1
PROCESS N
VIRTUAL NAMESPACE
VIRTUAL NAMESPACE
OPERATING SYSTEM
HARDWARE

FIG. 3

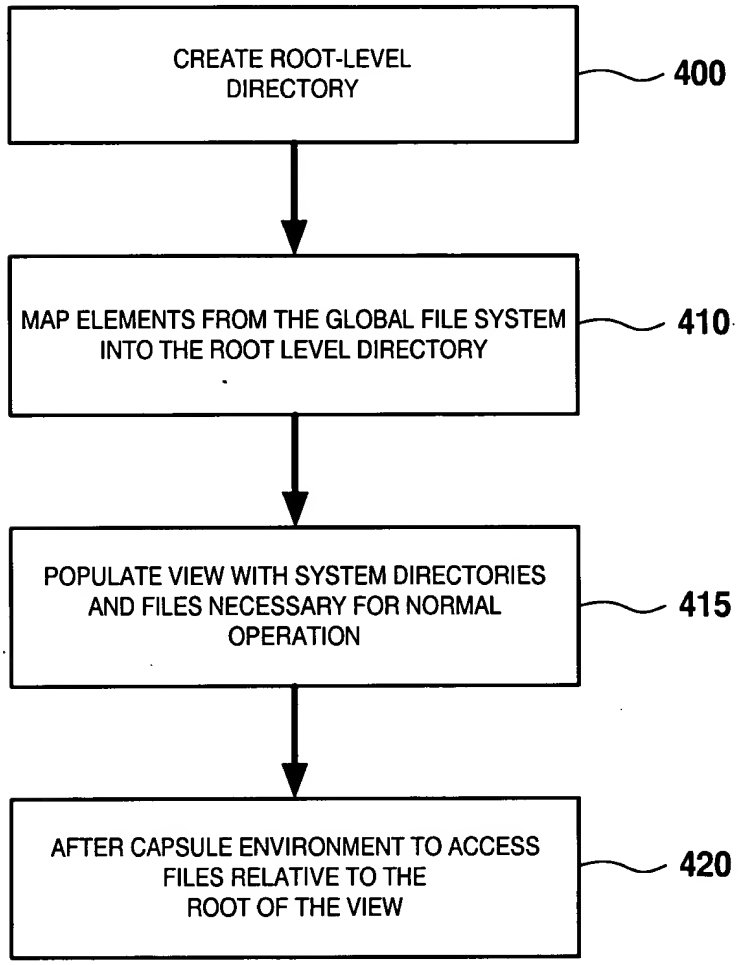
CREATE ROOT-LEVEL DIRECTORY
400
MAP ELEMENTS FROM THE GLOBAL FILE SYSTEM INTO THE ROOT LEVEL DIRECTORY
410
POPULATE VIEW WITH SYSTEM DIRECTORIES AND FILES NECESSARY FOR NORMAL OPERATION
415
AFTER CAPSULE ENVIRONMENT TO ACCESS FILES RELATIVE TO THE ROOT OF THE VIEW
420

FIG. 4

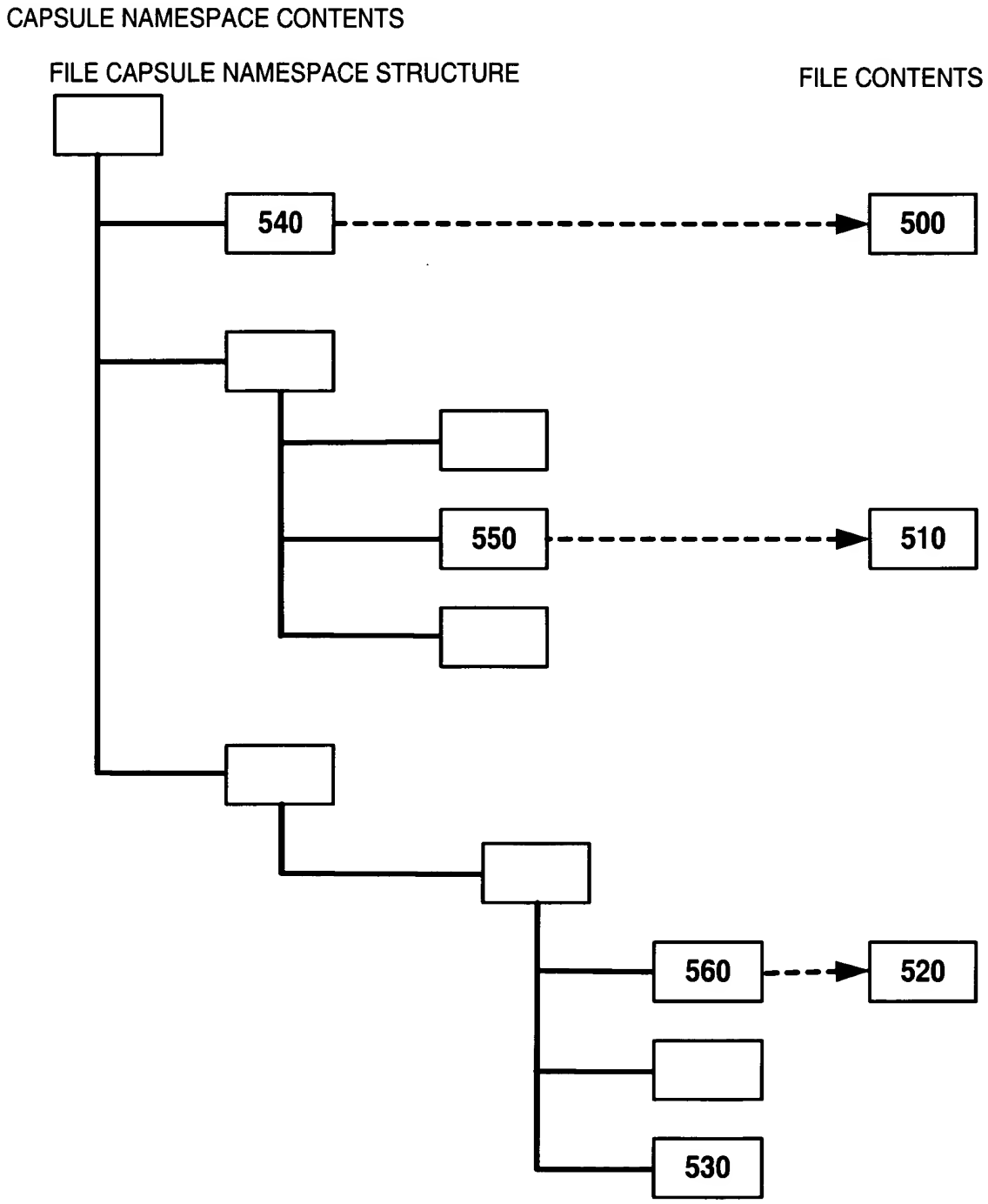
CAPSULE NAMESPACE CONTENTS
FILE CAPSULE NAMESPACE STRUCTURE
FILE CONTENTS
540
500
550
510
560
520
530

FIG. 5

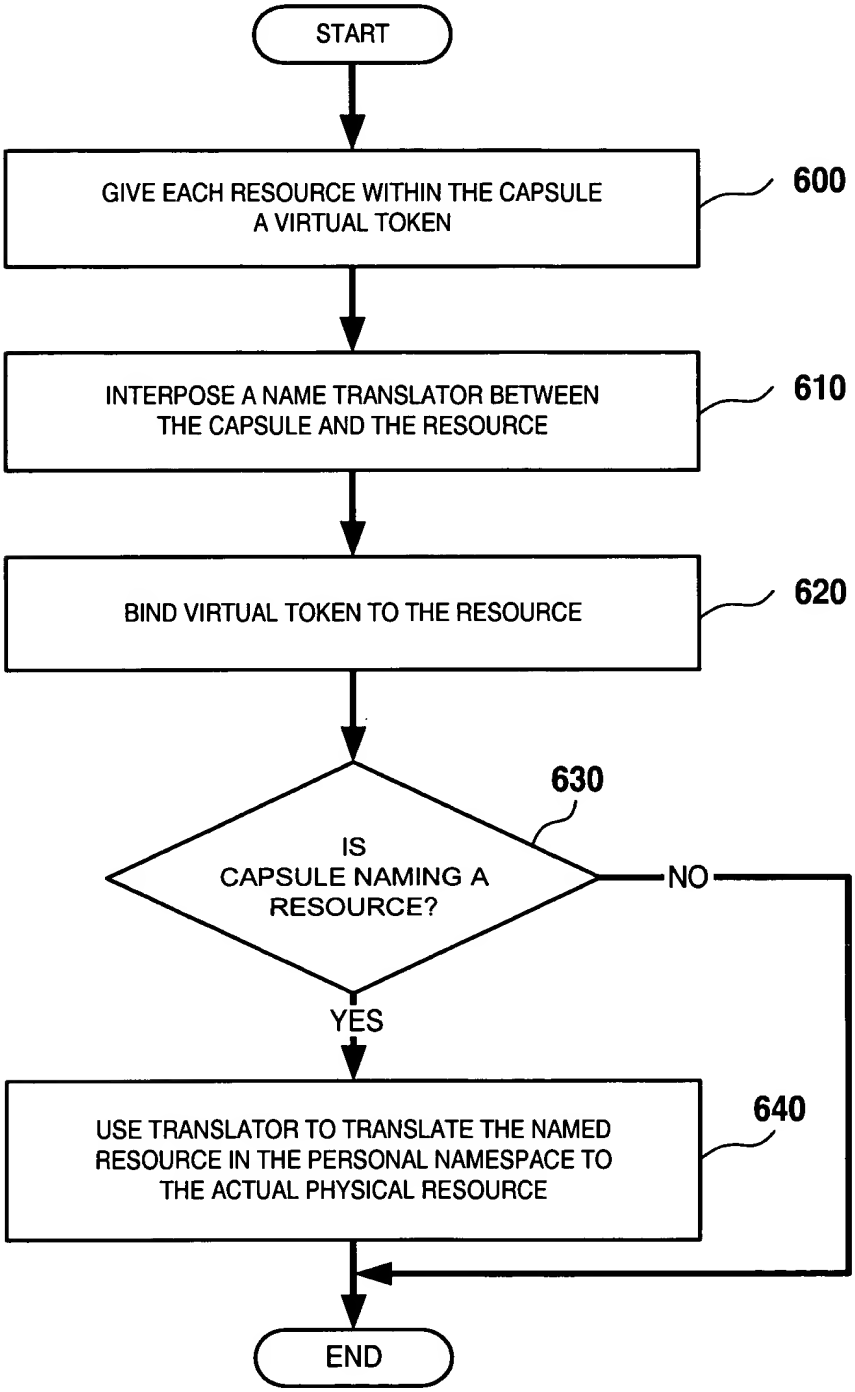
START
GIVE EACH RESOURCE WITHIN THE CAPSULE A VIRTUAL TOKEN
600
INTERPOSE A NAME TRANSLATOR BETWEEN THE CAPSULE AND THE RESOURCE
610
BIND VIRTUAL TOKEN TO THE RESOURCE
620
630
IS CAPSULE NAMING A RESOURCE?
NO
YES
USE TRANSLATOR TO TRANSLATE THE NAMED RESOURCE IN THE PERSONAL NAMESPACE TO THE ACTUAL PHYSICAL RESOURCE
640
END

FIG. 6

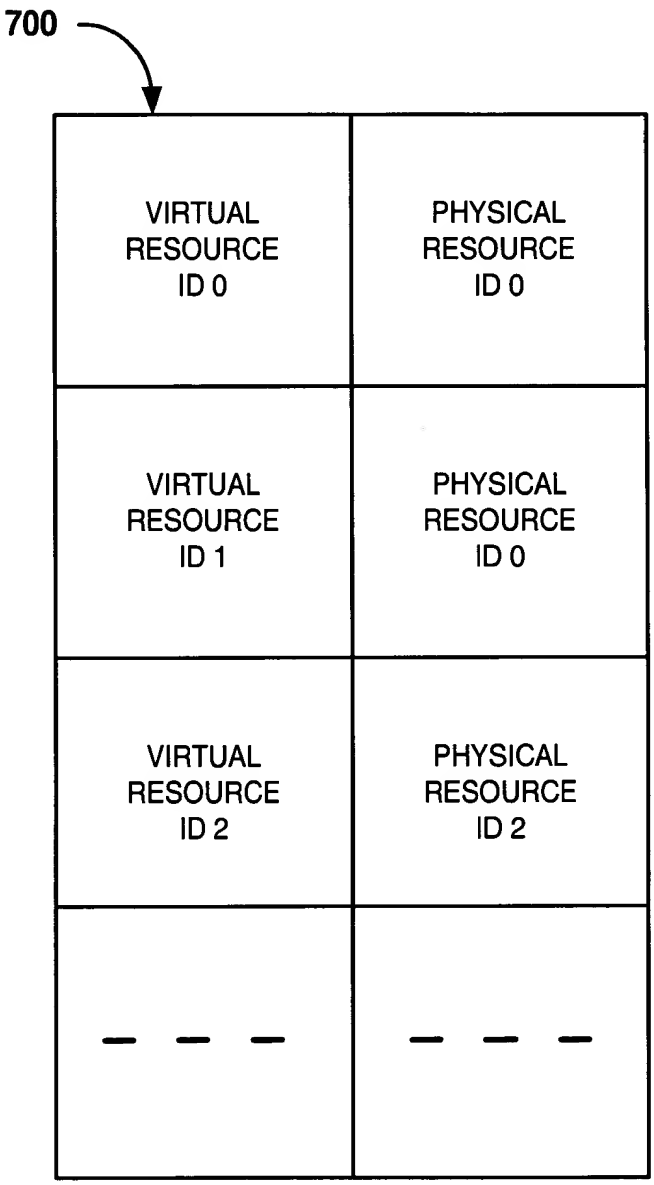
700
VIRTUAL RESOURCE ID 0
PHYSICAL RESOURCE ID 0
VIRTUAL RESOURCE ID 1
PHYSICAL RESOURCE ID 0
VIRTUAL RESOURCE ID 2
PHYSICAL RESOURCE ID 2

FIG. 7

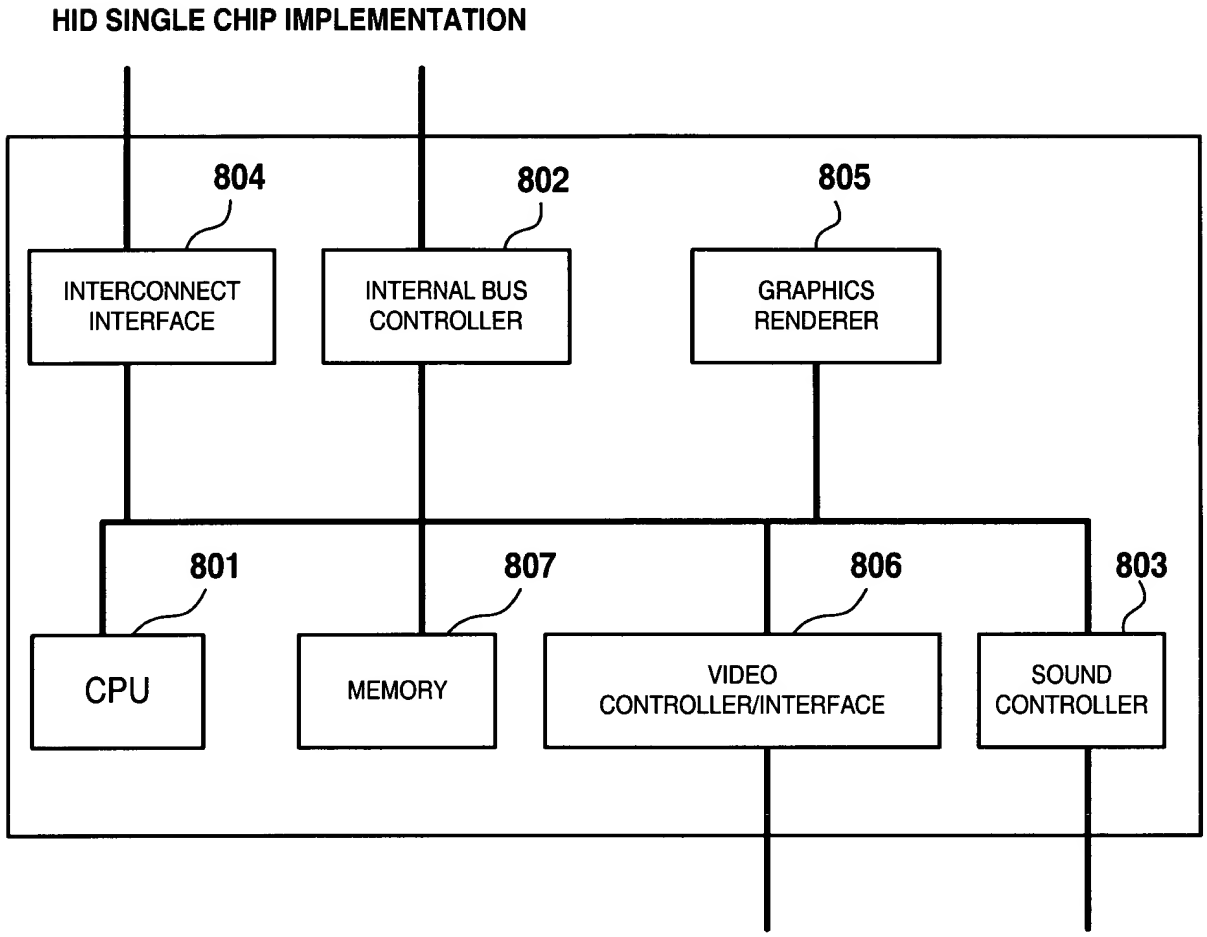
HID SINGLE CHIP IMPLEMENTATION
804
802
805
INTERCONNECT INTERFACE
INTERNAL BUS CONTROLLER
GRAPHICS RENDERER
801
807
806
803
CPU
MEMORY
VIDEO CONTROLLER/INTERFACE
SOUND CONTROLLER

FIG. 8

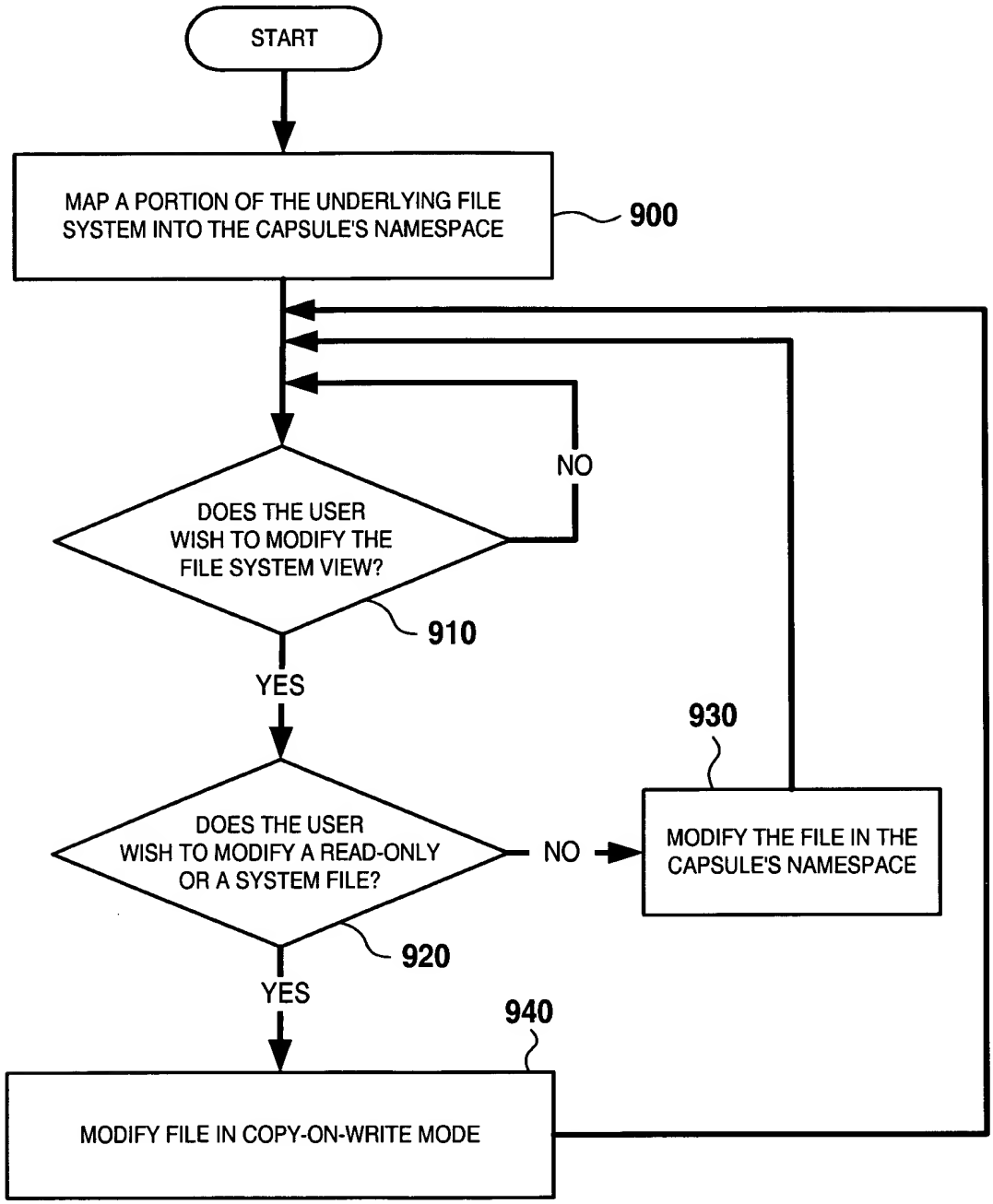
START
MAP A PORTION OF THE UNDERLYING FILE SYSTEM INTO THE CAPSULE'S NAMESPACE
900
DOES THE USER WISH TO MODIFY THE FILE SYSTEM VIEW?
NO
910
YES
930
DOES THE USER WISH TO MODIFY A READ-ONLY OR A SYSTEM FILE?
NO
MODIFY THE FILE IN THE CAPSULE'S NAMESPACE
920
YES
940
MODIFY FILE IN COPY-ON-WRITE MODE

FIG. 9

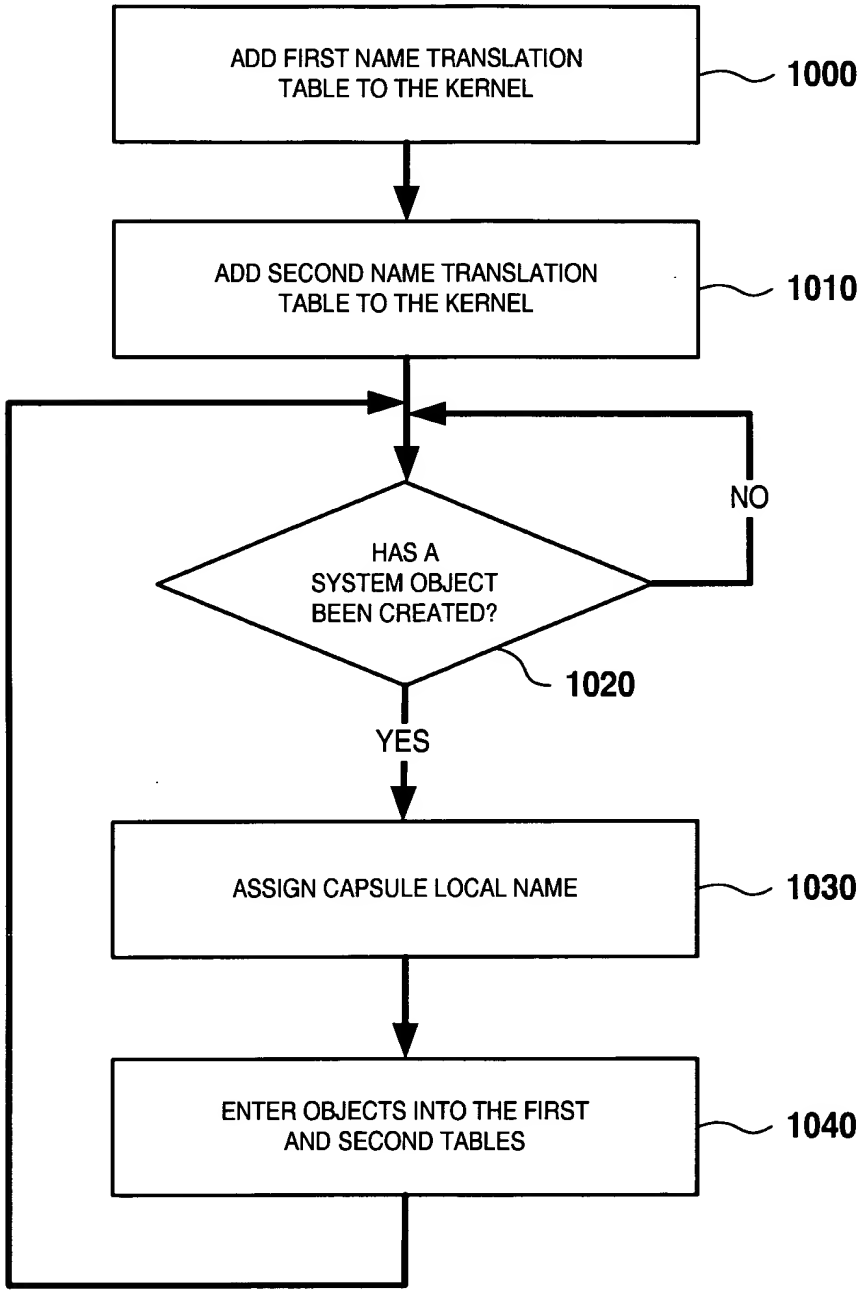
ADD FIRST NAME TRANSLATION TABLE TO THE KERNEL
1000
ADD SECOND NAME TRANSLATION TABLE TO THE KERNEL
1010
HAS A SYSTEM OBJECT BEEN CREATED?
NO
1020
YES
ASSIGN CAPSULE LOCAL NAME
1030
ENTER OBJECTS INTO THE FIRST AND SECOND TABLES
1040

FIG. 10

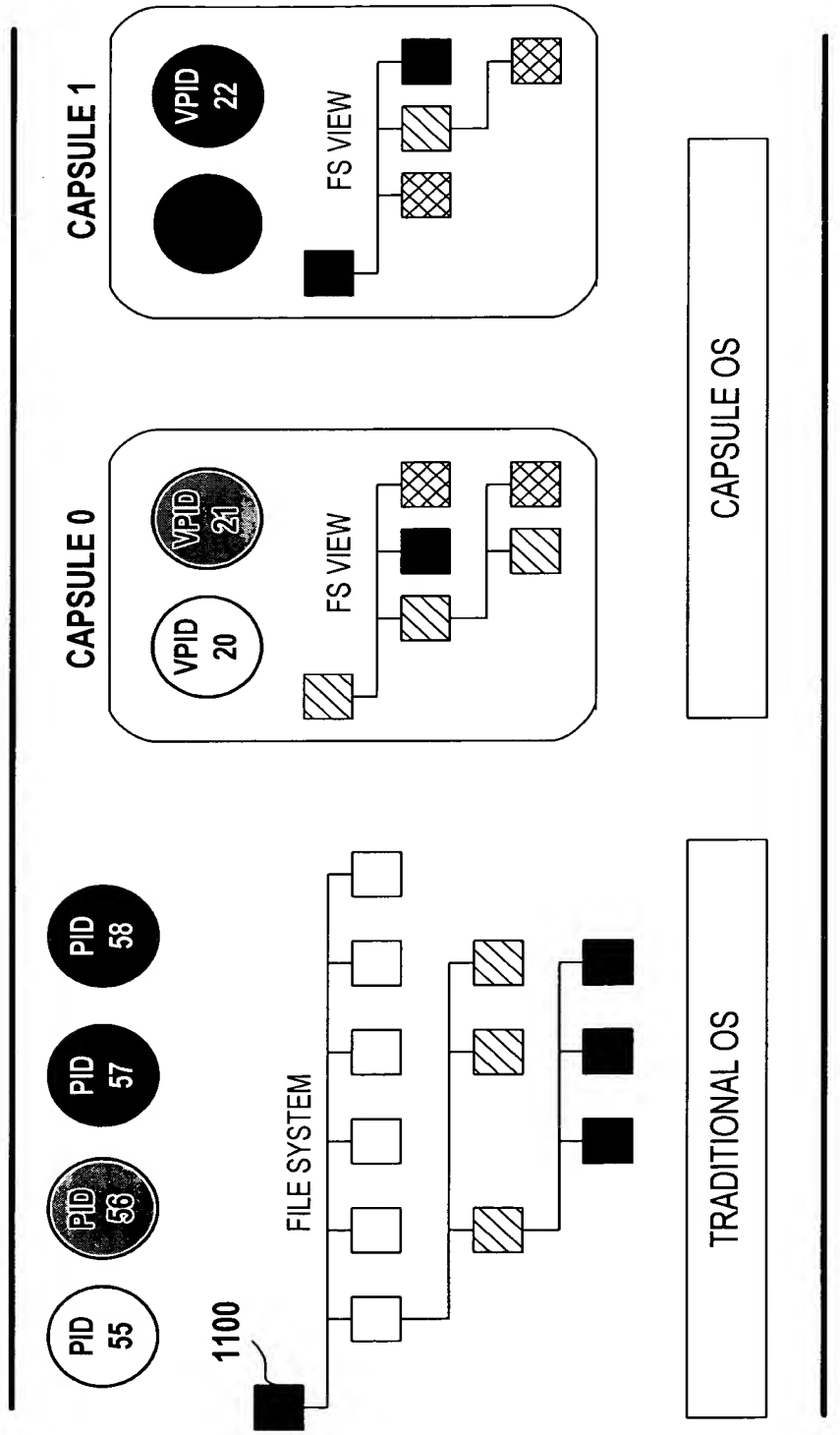
CAPSULE 1
VPID 22
FS VIEW
CAPSULE 0
VPID 21
VPID 20
FS VIEW
CAPSULE OS
PID 58
PID 57
PID 56
PID 55
1100
FILE SYSTEM
TRADITIONAL OS

FIG. 11

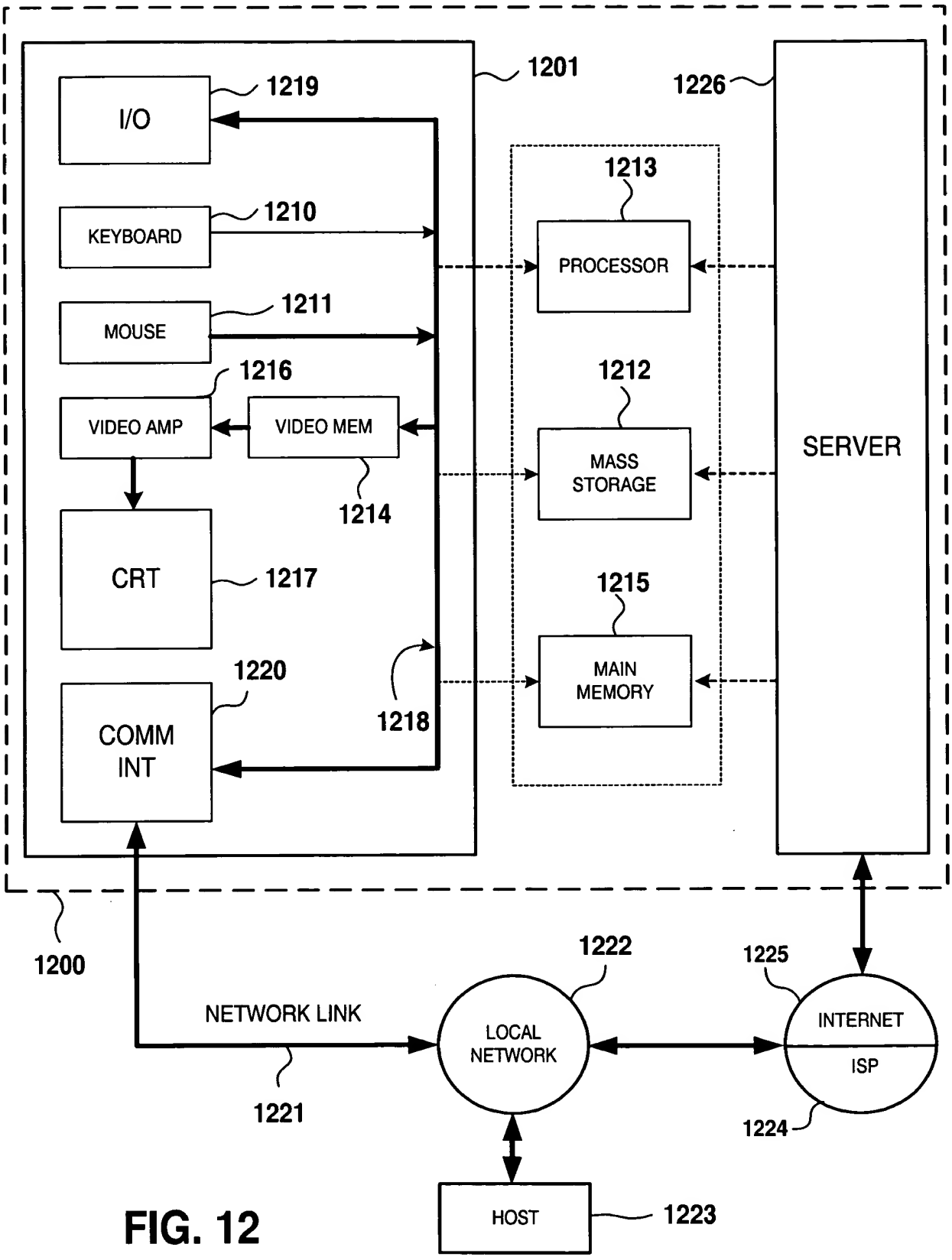
1201
1219
I/O
1210
KEYBOARD
1211
MOUSE
1216
VIDEO AMP
VIDEO MEM
1214
CRT
1217
1220
COMM INT
1218
1213
PROCESSOR
1212
MASS STORAGE
1215
MAIN MEMORY
1226
SERVER
1200
1222
NETWORK LINK
LOCAL NETWORK
1221
1225
INTERNET
ISP
1224
HOST
1223

FIG. 12

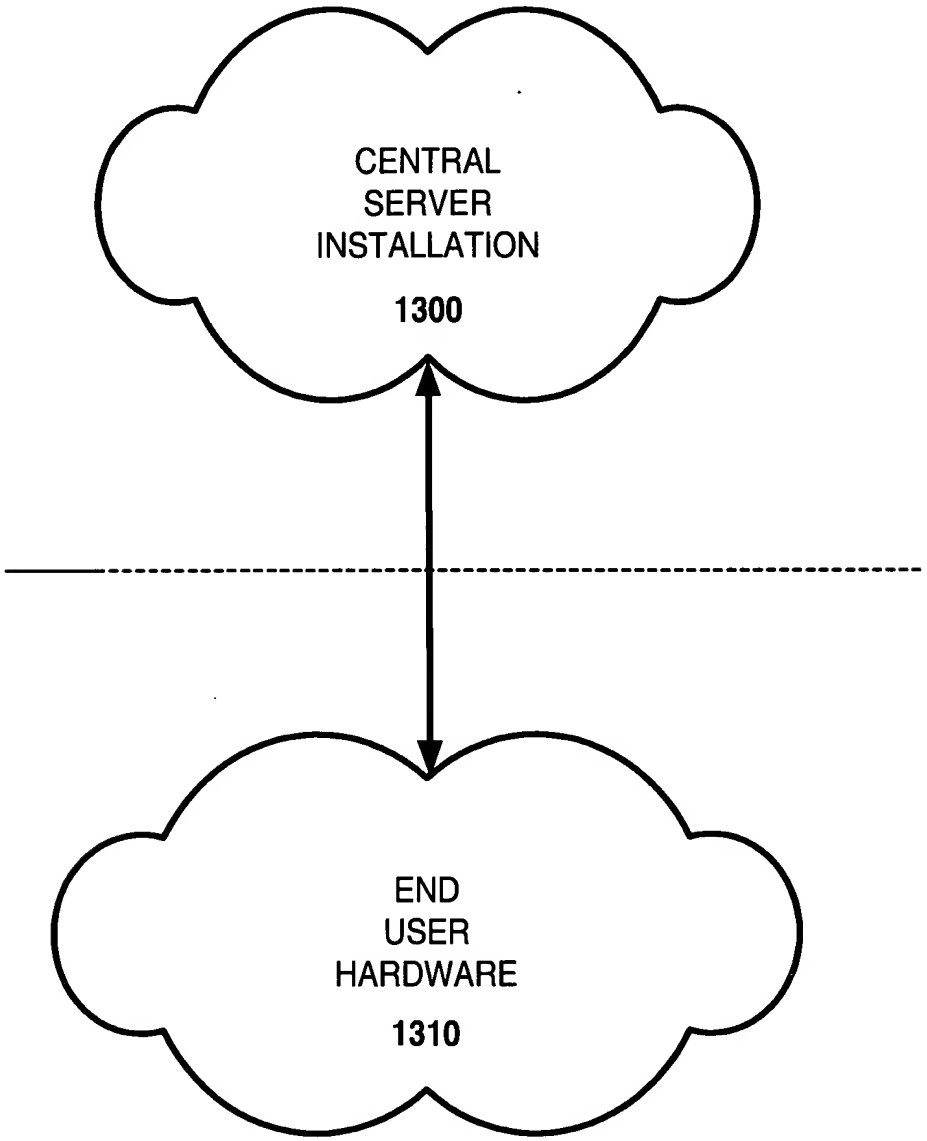


**FIG. 13**

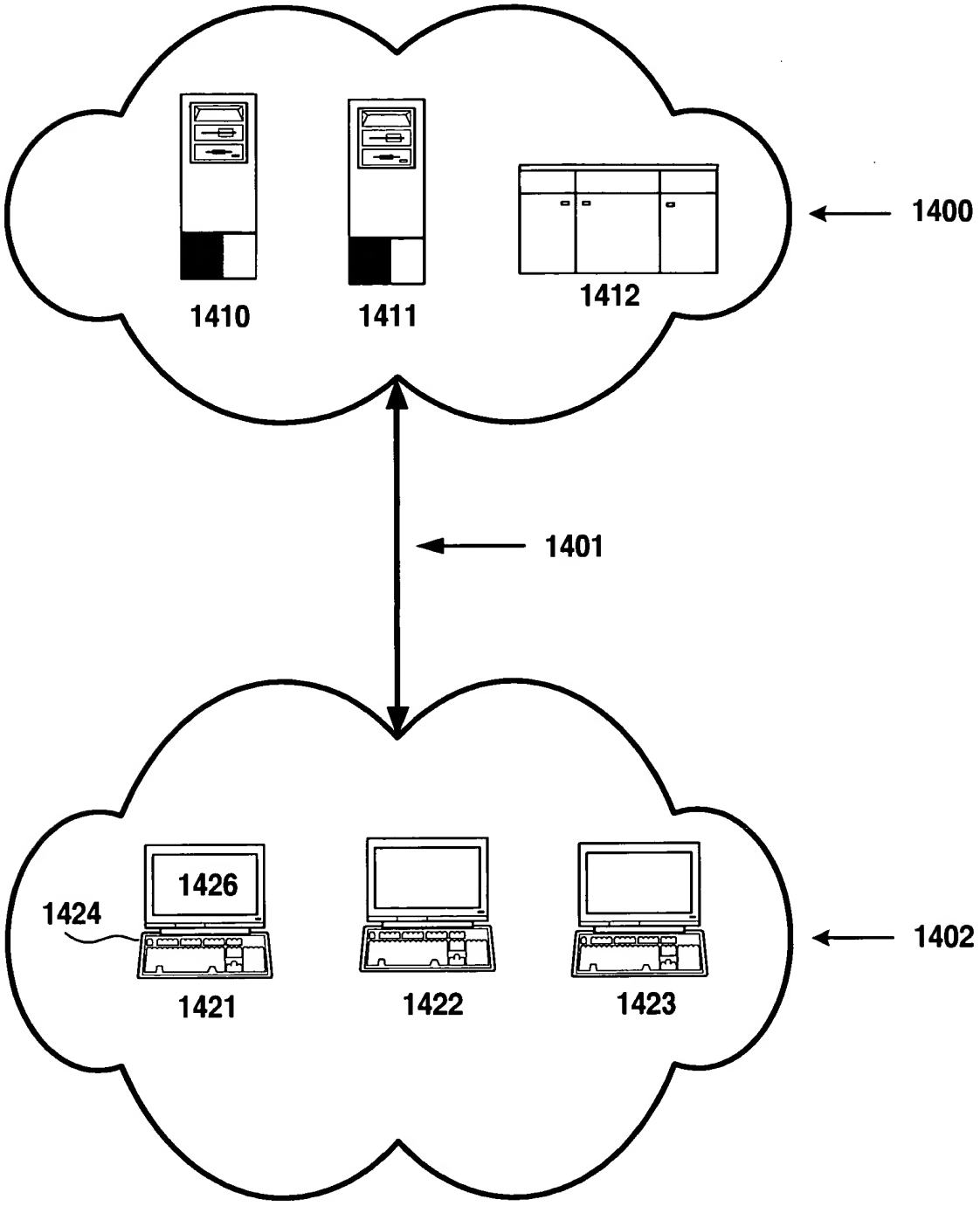


FIG. 14

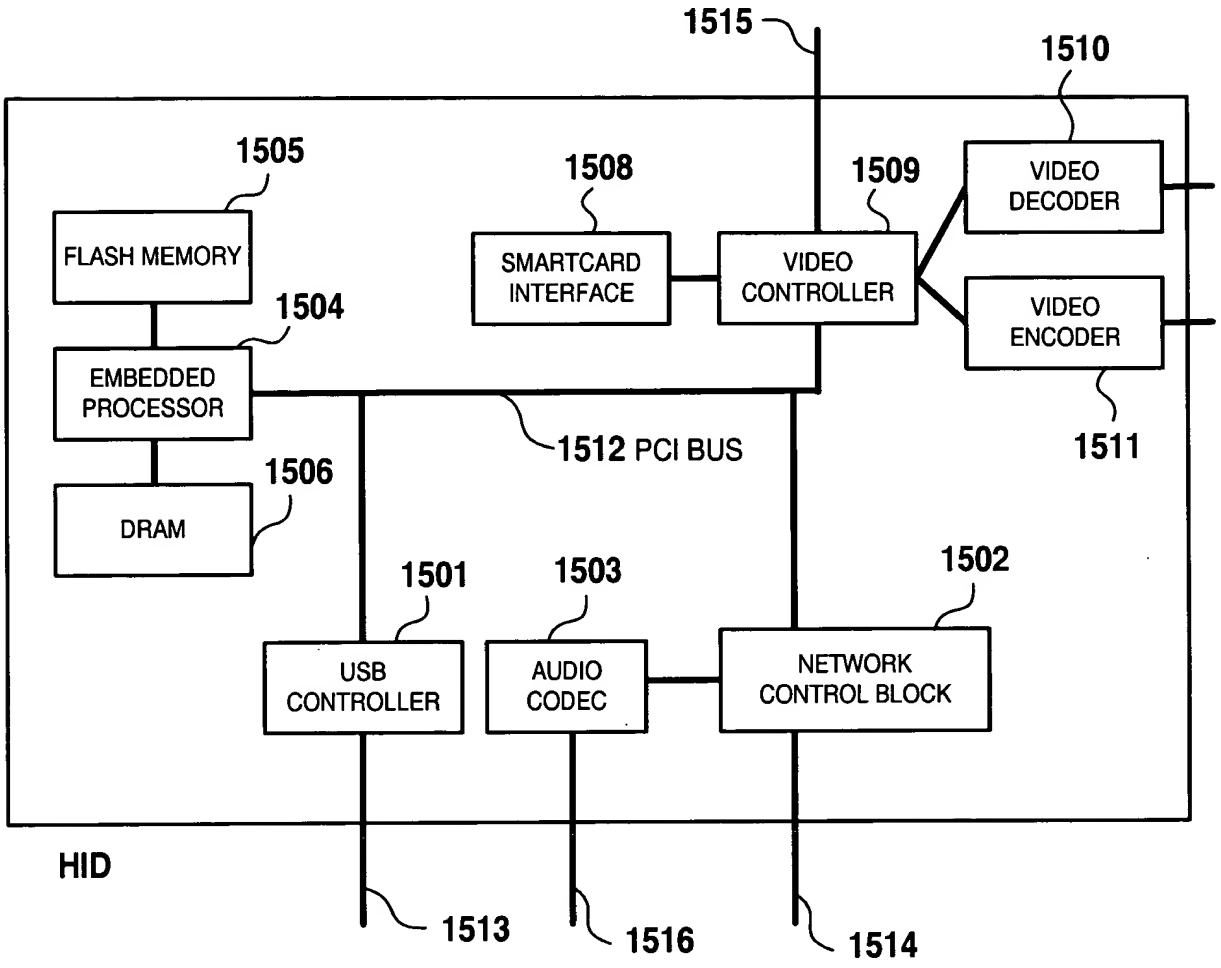
1515
1510
1505
1508
1509
VIDEO DECODER
FLASH MEMORY
SMARTCARD INTERFACE
VIDEO CONTROLLER
1504
VIDEO ENCODER
EMBEDDED PROCESSOR
1512 PCI BUS
1511
1506
DRAM
1501
1503
1502
USB CONTROLLER
AUDIO CODEC
NETWORK CONTROL BLOCK
HID
1513
1516
1514

FIG. 15